

WHAT IS CLAIMED IS:

1. A chemical change agent for preparing a synthetic fuel, comprising:
water;
glycerides; and
5 a surfactant.
2. The chemical change agent for preparing a synthetic fuel of claim 1 wherein
the water is from 0 wt. % to 70 wt. % of the chemical change agent;
the glycerides are from 10 wt. % to 40 wt. % of the chemical change agent; and
the surfactant is from 0.25 wt. % to 4 wt. % of the chemical change agent.
- 10 3. The chemical change agent for preparing a synthetic fuel of claim 1 further
comprising a tall oil.
4. The chemical change agent for preparing a synthetic fuel of claim 3 wherein the
tall oil is tall oil pitch.
5. The chemical change agent for preparing a synthetic fuel of claim 3 wherein the
15 glycerides have a carbon number of sixteen to eighteen.
6. The chemical change agent for preparing a synthetic fuel of claim 3 wherein the
glycerides are vegetable oil.
7. The chemical change agent for preparing a synthetic fuel of claim 3 wherein the
glyceride is selected from the group consisting of soy oil, soybean oil, palm oil,
20 corn oil, and cotton seed oil.
8. The chemical change agent for preparing a synthetic fuel of claim 3 wherein the
pH is maintained between about 7.0 and 11.0.
9. The chemical change agent for preparing a synthetic fuel of claim 3 wherein a
portion of the surfactant is created through the addition of a base to the glycerides.

10. The chemical change agent for preparing a synthetic fuel of claim 3 wherein

the water is from 0 wt. % to 70 wt. % of the chemical change agent;

the tall oil is from 0 wt. % to 60 wt. % of the chemical change agent;

the glycerides are from 0.25 wt. % to 40 wt. % of the chemical change agent; and

5 the surfactant is from 0.25 wt. % to 4 wt. % of the chemical change agent.

11. The chemical change agent for synthetic fuel of claim 3 wherein the chemical change agent is characterized as having a viscosity between around 50 centipoise to about 200 centipoise.

12. The chemical change agent for synthetic fuel of claim 3 wherein the chemical change agent is characterized as having a sulfur content of less than 0.2% by weight.

13. The chemical change agent for preparing a synthetic fuel for synthetic fuel of claim 3 wherein the chemical change agent is characterized as having a closed cup flash point of at least about 392 °F (200 °C).

14. The chemical change agent for preparing a synthetic fuel of claim 3 wherein the chemical change agent creates a stable emulsion at storage temperatures between about 70 °F and 160 °F (21 °C and 71 °C).

15. The chemical change agent for preparing a synthetic fuel of claim 3, wherein the surfactant is an anionic soap.

16. The chemical change agent for preparing a synthetic fuel of claim 3, wherein the surfactant is derived from tall oil.

17. The method of producing a chemical change agent comprising the steps of combining water, glycerides, and surfactant to form an emulsion.

18. The method of producing a chemical change agent of claim 17 further comprising the steps of:

heating a tall oil pitch to at least about 200 °F (93 °C); and

adding tall oil pitch and the water, glycerides, and surfactant to form an emulsion.

19. The method of producing a chemical change agent of claim 18, further including the step of subjecting the emulsion to shear in a mixer.

5 20. The method of producing a chemical change agent of claim 18, wherein the emulsion is in droplets between 5 microns to 10 microns.

21. The method of producing a chemical change agent of claim 18, wherein the mixer is a colloid mill or a turbine type rotor-stator device.

10 22. The method of producing a chemical change agent of claim 18, further including the following step of adding a base to the water, glycerides, and surfactant before adding the pitch oil and forming the emulsion until the chemical change agent has a concentration of about 0.05 mol % to about 0.1 mol % base.

23. A synthetic fuel comprising:

coal;

15 water;

glycerides; and surfactant.

24. The synthetic fuel of claim 23 further comprising tall oil.

20 25. The synthetic fuel of claim 24 wherein the coal is from about 98.8 weight percent and 99.5 weight percent of the synthetic fuel and the chemical change agent is from about 0.5 weight percent to 1.2 weight percent of the synthetic fuel.

26. A method of producing synthetic fuel comprising the steps of:

mixing fine carbonaceous material with a chemical change agent comprising an emulsion of water, tall oil, glycerides, and surfactant; and

pressing the carbonaceous material with chemical change agent into a briquette.

27. A method of producing synthetic fuel comprising the steps of:

mixing fine carbonaceous material with a chemical change agent comprising an emulsion of water, glycerides, and surfactant; and

pressing the carbonaceous material with chemical change agent into a briquette.

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